

the centre will be  $\frac{r^2}{2\rho}$ , or  $\cdot 56 r^2 \times 10^{-6}$ . In the case of a diameter of 6 centimetres this becomes  $5\cdot0 \times 10^{-6}$ .

Five-millionths of a centimetre is certainly a small amplitude, but it is probable that the sound would be audible. In an experiment (made, it is true, at a higher pitch) I found sound audible whose amplitude was less than a ten-millionth of a centimetre. We may conclude, I think, that there is at present no reason for discarding the obvious explanation that the sounds in question are due to the bending of the plates under unequal heating.

January 13

RAYLEIGH

### NOTES

WE regret to learn of the death of the Rev. Humphrey Lloyd, D.D., Provost of Trinity College, Dublin, on the 17th inst., at the age of eighty-one years. Dr. Lloyd's contributions to scientific literature have been many and important, and to these and to his career generally we hope to refer at length in our next number.

PROF. HUXLEY has been appointed to the Inspectorship of Fisheries vacant by the death of Mr. Frank Buckland.

THE Queen has been pleased to confer a pension of 200*l.* upon Mr. Alfred Russel Wallace.

THE election of Dr. B. A. Gould of Cordoba in the place of the late Prof. C. A. F. Peters, director of the Observatory at Kiel, as Correspondent of the Academy of Sciences at Paris, completes the authorised number in the section of Astronomy.

YORK has already begun to make preparations for the 51st meeting of the British Association in that city on August 31 next. A meeting is to be held on the 26th inst. to appoint a reception committee and take other steps in connection with the approaching visit of the Association. The local secretaries are the Rev. Thomas Adams and Dr. Tempest Anderson.

THE well-known collection of fossils formed by the late Mr. E. Wood of Richmond, Yorkshire, has been purchased by Mr. William Reed, F.G.S., of York, and by him presented to the Museum of the Yorkshire Philosophical Society, York. The collection consists of about 10,000 specimens, and is specially rich in fossils from the Carboniferous rocks.

THE great *soirée* of the Paris Observatory will take place on February 5. One of the features of the display will be a series of vacuum tubes exhibiting the spectral peculiarities of the several gases inclosed.

DR. FRITSCH, Professor of Zoology at the University of Prague, has sent us a specimen of a cast, taken by the galvanoplastic process, of a skeleton of one of the extraordinary Labyrinthodont reptiles, described by him in his work, "*Fauna der Gaskohle der Permformation Böhmens*." As the matrix in which these skeletons are found contains much pyrites, it soon crumbles away on exposure to the air. By this process of Dr. Fritsch's the specimens however may be examined, even when magnified twenty-fold, and all little minutiae of the skeleton can be seen. Complete sets of these galvanoplastic casts, representing all the more important reptile remains found, can be had on application to Prof. Fritsch.

In Siberia, a country so rich in gigantic fossils, the body of a colossal rhinoceros has been discovered in the Werchojanski district. It was found on the bank of a small tributary to the Jana River, and was laid bare by the action of the water. Similar to the mammoth washed ashore by the Lena River in 1799, it is remarkably well preserved, the skin being unbroken and covered with long hair. Unfortunately only the skull of

this rare fossil has reached St. Petersburg, and a foot is said to be at Irkutsk, while the remainder was allowed to be washed away by the river soon after it had been discovered. The investigation of the skull gave the interesting result that this rhinoceros (*R. Merckii*) is a connecting form between the species now existing and the so-called *Rhinoceros tichorhinus*, remains of which are not unfrequently found in the gravel strata of Eastern Prussia. It is supposed that *R. Merckii* is the now extinct inhabitant of the eastern part of Siberia.

HERR JULIUS GILLIS, a wealthy merchant of St. Petersburg, offers a prize of 1000 florins for a popular work on "Kant's Views on the Ideality of Time and Space." Herr Gillis will not only pay the cost of publishing of the work which obtains the prize, but will also let the author have the profits its sale may realise. Details regarding this matter can be obtained from Last's Literary Institute at Vienna.

MR. WARREN DE LA RUE will, on Friday next, the 21st inst., deliver his discourse at the Royal Institution on "The Phenomena of the Electric Discharge with 14,400 Chloride of Silver Cells." Prof. Schäfer will give the first of a course of twelve lectures on the Blood, on Tuesday next (January 25); Mr. Francis Hueffer, the first of a course of four lectures on the Troubadours, on Thursday next (January 27); and Mr. Sidney Colvin the first of a course of four lectures on the Amazons, on Saturday next (January 29). The next Friday evening discourse will be given by Dr. Arthur Schuster, on the Teachings of Modern Spectroscopy, on January 28.

MR. E. T. SACHS sends us some interesting notes from Batavia:—"Within the past month I have been so lucky as to make what I hope is a very interesting if not remarkable discovery. On the Island of Biliton, 200 miles from here, I found a freshwater fish which produces its young *living from its mouth*. I am quite prepared for the cry of incredulity that will be raised; but I conducted my observations with living fish and closed doors, and what I assert is undeniable: the eggs are hatched in the lower portion of the head of the fish, and are projected out at the mouth and from nowhere else. I have secured several specimens, which I shall send to Dr. Günther, who will of course at once set the matter at rest. I also got on Biliton a butterfly, which is either a new *Thecla* or else it is the male of the pretty *Myrina nivea* peculiar to the island. I fancy it must be the latter. I was only three weeks on the island on other business, and was never two miles from the shore, so I have reason to be satisfied with my trip. I mean to go again next May or thereabouts, and go into the interior, and also try to get some living fish to breed from in Batavia. . . . There is a Dr. Schluyter here who is working hard at invertebrates. He is just busy on the tri-pang family, and will no doubt produce a fine monograph. He gets some fine crustaceans from the Straits of Sunda. I have shown him my fish, and he knows nothing of it."

ON the subject of crickets Mr. Sachs writes:—"These are sold in the markets in Batavia, inclosed in small bamboos. There is not much superstition about it, as little ticklers (pieces of stick with a bunch of plants analogous to our broom tied on the end) are sold with it wherewith to stir up the unfortunate insect when it doesn't chirp. Only children buy them."

A SHARP shock of earthquake was felt at Peshawur at 4 a.m. on December 10. The atmosphere was clear at the time; small drafts and eddies of cold wind followed the shock. The previous evening there had been a few drops of rain, the first for three months. The temperature was rather warmer than it had been, owing to the sky being more overcast. A smart shock was felt at the Bridge of Allan, near Stirling, on the morning of the 12th, about seven o'clock. There was a severe shock at Thurgau on the night of the 13th, accompanied by underground noises.

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THE difficulties of the old Paris Municipal Council with the gas company were not adjusted before its dissolution. We believe that the new Municipal Council is sure to accept all the proposals coming from any gas company which has proved practically by some previous experiments the value of their system, and are willing to accept a remuneration proportional to the quantity of light produced on a scale similar to the Lontin agreement, viz. 10 deniers for each 120 or 130 sperm candles.

THE French Government has appointed an engineer of the Ponts et Chaussées, M. de Villier du Terroge, to report on the possibility of establishing in Paris underground railways. The difficulty is in the length of the tunnels to be excavated, which will be greater than on the Metropolitan Railway, and the necessity of procuring smoke-consuming engines.

ON the 7th inst. a silver tea and coffee service was presented by the Mayor of Liverpool, in the name of a large number of subscribers, to Mr. A. Norman Tate for his disinterested efforts to promote scientific education in that city.

A GENERAL Horticultural Exhibition will be held at Frankfort-on-Main from May 1 to October 1 this year. Particulars may be obtained by applying to "Die Gartenbau-Gesellschaft" at Frankfort-on-Main.

THE Electric Railway, constructed by Siemens and Halske, between the Anhalter Station, in Berlin, and the suburban village of Lichtenfeld, has been satisfactorily completed, and will be opened to public traffic on the 1st of next month.

A NEW electric lamp has been brought out in Paris; it is a combination of the Werdermann with a perforated carbon filled by an insulating medium. It is said to work well.

AT a meeting of the Council of the Epping Forest Naturalists' Field Club, held on Saturday evening, January 8, the following resolution was passed on the motion of Mr. Francis George Heath, seconded by Mr. N. F. Roberts, F.G.S.—"That the Council of this Society, on behalf of the large section of the population of London interested in the pursuit of Natural History, desires to record an emphatic protest against the proposal of the Great Eastern Railway Company to carry a line across Epping Forest, believing that it is wholly unnecessary for the Railway to take the route projected, and that it would not fail to prejudicially affect the advantages secured by the Epping Forest Act, which directs that the forest is to be preserved as far as possible in its natural aspect."

### OUR ASTRONOMICAL COLUMN

JANSON'S STAR OF 1600.—The so called *Nova* of 1600, which is 34 Cygni of Flamsteed and P Cygni of Schönfeld's catalogues of variable stars, was discovered by Wilhelm Janson, a pupil of Tycho Brahe's, and entered upon his globe in that year. It has been erroneously stated in some astronomical works (as in Cassini's "Elements d'Astronomie") that Kepler was a co-discoverer of this star, of which he himself informs us to the contrary in his treatise, "De stella tertii honoris in Cygno, quæ ad annum MDC fuit incognita necdum extinguitur, Narratio astronomica"; this is appended to his well-known work, "De stella nova in pede Serpentarii," published at Prague in 1606. At p. 154 we read, "Cum mense Mayo anni 1602 primum literis moneretur de novo Cygni fenomeno," &c., while at p. 164 Kepler says distinctly that Janson was the discoverer, "Primus est Gulielmus Jansonius, qui hanc novam a se primum anno 1600, conspectam profertur inscriptum in globum celestem anno 1600 editum factâ." Kepler gave the position of the star for the end of 1600 in R.A.  $300^{\circ} 46'$ , Decl.  $+ 36^{\circ} 52'$ . He observed it during nineteen years, it became fainter in 1619, and disappeared in 1621, though Fortunio Liceti dates a reappearance in the same year. In 1655 Dominique Cassini observed it again; it increased during five years, until it attained the third magnitude, and afterwards diminished. On the testimony of Hevelius, it reappeared in November, 1665, it was again faint in the following

year, but subsequently brightened without reaching the third magnitude, in 1677 and 1682, it was only of the sixth magnitude. Cassini says on June 24, 1715, a star of this magnitude was seen in the position of P (Bayer) equal to the three which are near that marked  $\delta$  in Cygnus by Bayer.

Edward Pigott was at some pains to elucidate the history of this star in a communication presented to the Royal Society in 1786 (*Philos. Trans.* vol. lxxvii. p. 189). He says he had minutely examined the observations made in the previous century with the following results as to the star's fluctuations:—

1. Continues at its full brightness for about five years.
2. Decreases rapidly during two years.
3. Invisible to the naked eye for four years.
4. Increases slowly during seven years.
5. All these changes, or its period, are completed in eighteen years.

6. It was at its *minimum* at the end of the year 1663.

It does not always increase to the same degree of brightness, being sometimes of the third, and at other times only of the sixth magnitude. He adds that he was entirely ignorant whether it were subject to the same changes since the beginning of the eighteenth century, as he had not met with any series of observations upon it.

It cannot be said that Pigott's conclusions (which Schönfeld appears to think are only indifferently supported by the observations upon which they are stated to be founded) have received any confirmation since his time. If in the absence of systematic series of observations we consult the catalogues of the present century, we have the following estimate of magnitude amongst others:—Piazzi, 5.6; Bessel, 6.7 (on September 14, 1825); Argelander's *Uranometria*, 5; and *Durchmusterung*, 5.3; Yarnall, 5.2; Radcliffe observations, 1870, 5.8. But in view of the undoubted variation in the brightness of this star in past times, more regular observation seems desirable. Has it ever been carefully examined under the spectroscope? Its light has a strong yellow cast. Mädler found no appreciable proper motion. The star occurs in the second Radcliffe catalogue, and in the Greenwich catalogue of 1864. The position carried back to Kepler's epoch from these authorities is in close accordance with that given in his treatise.

THE NEW CAPE CATALOGUE.—At the meeting of the Royal Astronomical Society on the 14th inst. the Radcliffe observer, Mr. E. J. Stone, laid upon the table the complete sheets of his great Catalogue of Southern Stars, observed during his superintendence of the Royal Observatory, Cape of Good Hope, which has been printed since his return to England. This very important work contains the places of between twelve and thirteen thousand stars, including, in addition to the stars observed by Lacaille, a considerable number of stars falling within similar limits of magnitude. "A stereographic projection, showing the distribution of the stars contained in the Cape Catalogue, 1880, between  $110^{\circ}$  and  $180^{\circ}$  N.P.D." has been lithographed by Mr. Stone. We believe a number of suspected cases of large proper motion amongst the southern stars disappear under the new determination of their positions at the Cape.

### BIOLOGICAL NOTES

ARCHÆOPTERYX MACRURA.—A very able article on this strange-feathered animal by Prof. Carl Vogt was read before the Saint Gall Meeting of the Congress of Swiss Naturalists, and was published in the *Revue Scientifique* for September, 1879. This has been translated in the recently-published number of *Ibis*, with a photograph of Herr Häberlein's specimen. H. von Meyer, in 1861, described this species (under the specific name lithographica) from the impression of a "bird's" feather in the Solenhofen slate. Prof. Owen, on the discovery by Dr. Häberlein of a specimen (imperfect) described it "as he alone knows how to do." The head of this specimen was wanting. Dr. Häberlein's son, about 1875, succeeded in splitting a slab so skilfully as to have on one of its halves the whole animal, and on the other its impression. This specimen Herr Häberlein is anxious to dispose of, and it is the one described by Carl Vogt. The animal preserved in the slab is of the size of a ringdove. The remains described by Prof. Owen belong to the same species, but to an example greater by a fifth. It is entire; the head, neck, trunk, and hind-quarters are placed in profile, the head is bent backwards, so that its top nearly touches the back. The wings, united at the shoulder girdle, are